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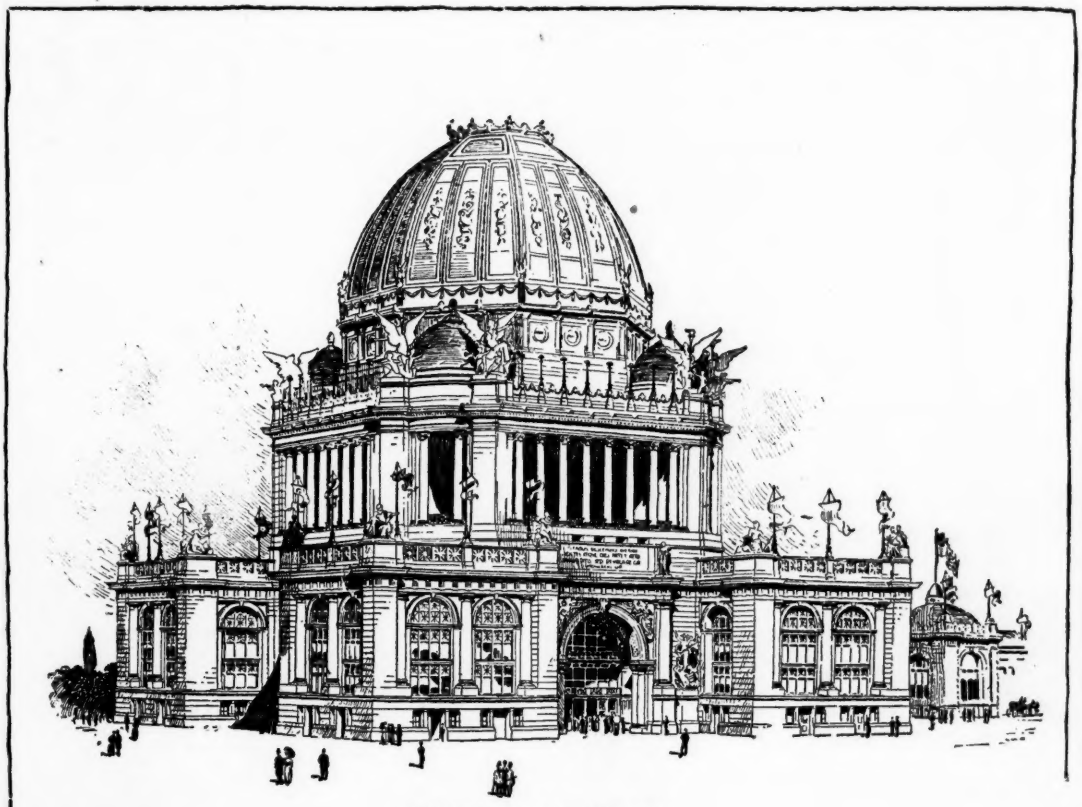


ADMINISTRATION BUILDING.

BUILDINGS FOR THE COLUMBIAN EXPOSITION.

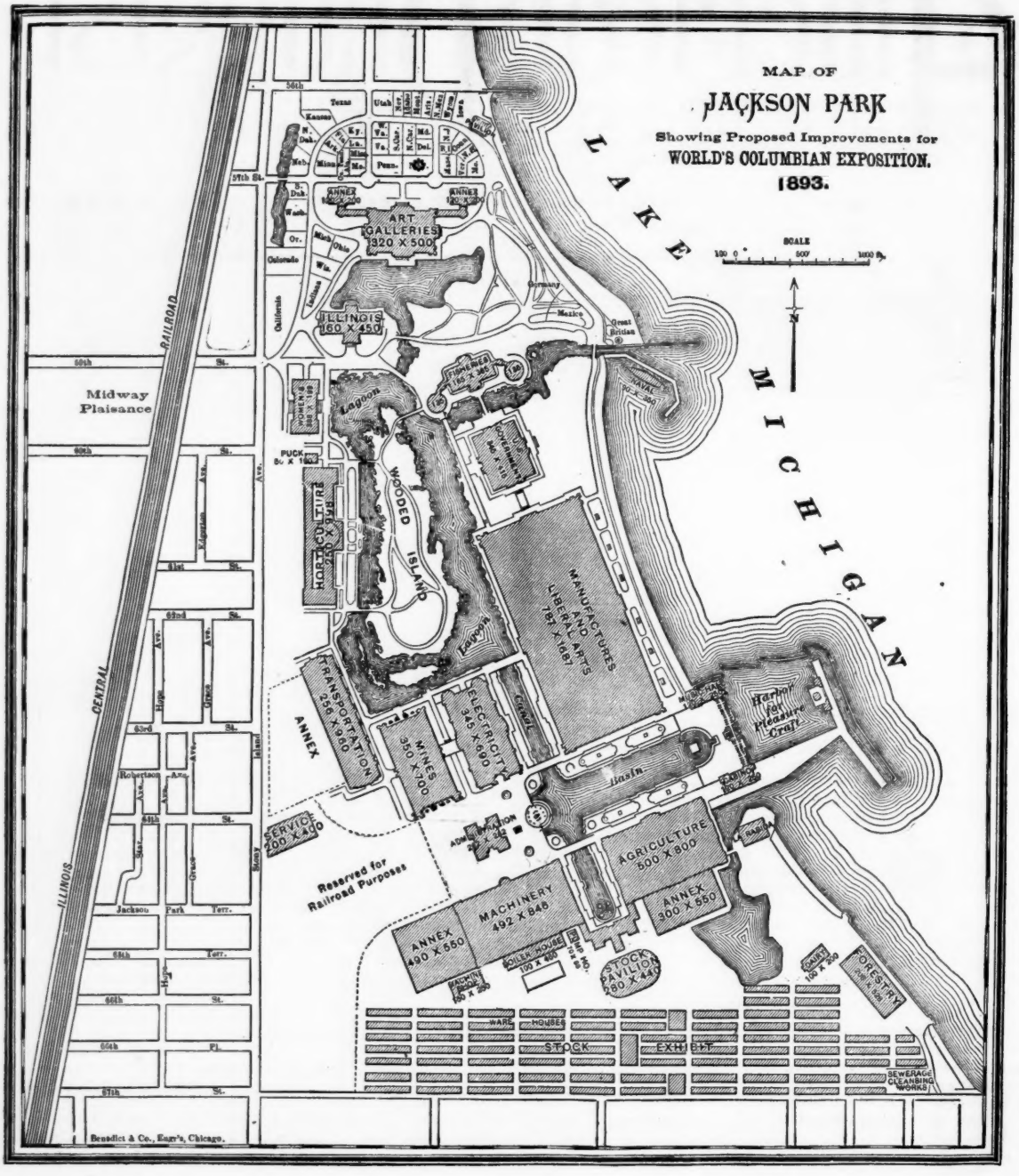
OUR readers will be interested in the series of illustrations in this number of some of the buildings now being erected for the Columbian Exhibition next year. We are indebted for them to a recent publication by the dry-goods merchants of this city as a means for promoting interest in their bill before the State Legislature for an appropriation of money to provide suitable representation of the industries and arts of the State. The bill referred to has already been presented to the Legislature, and pharmacists will do well to obtain signatures to petitions addressed to Senators or Assemblymen of their district to aid its adoption. A form for such petition is herewith submitted and should receive earnest and immediate attention.

A most interesting account of the measures and buildings undertaken by the Commissioners of the Fair and of the steps already taken by foreign governments appears in *Harpers' Monthly* for January, and will serve to describe the illustrations here shown, our own space being insufficient for this purpose.

FORM OF A PETITION TO SENATORS AND ASSEMBLYMEN.

To the Honorable _____:

The undersigned, citizens of your district, appreciating the importance to the State of a proper representation of its industries and interests at the World's Fair to be held at Chicago, heartily indorse the Bill providing for an Appropriation for that purpose, and for a Commission to supervise the expenditure of the same, prepared by the Committee of the Dry-Goods Merchants of the City of New York, and request your earnest endeavors to secure its passage.



Limits to the Usefulness of Aluminum.

A. LÜBBERT and ROSCHER have made extensive experiments to determine the limits of the usefulness of aluminum for practical purposes. As a result it turned out that it is unsuitable for quite a number of purposes.

In the first place, it cannot be used when it is to come in contact with boiling water. Hence, aluminum cannot be used, for instance, for canned goods, because when the cans are immersed into boiling water to sterilize the contents, some of the metal would dissolve. Moreover, very many ingredients have a solvent action upon aluminum, more particularly organic acids in presence of sodium chloride, ammoniacal liquids, etc. Field or travelling flasks made of aluminum are entirely useless for army purposes, indeed almost for any purpose, since they are attacked by liquids containing as little as 1 per cent of acetic, citric, tartaric, etc., acids. Red Bordeaux and Moselle wines, also coffee and tea, soon take up notable quantities of the metal. Aluminum is also unsuited for articles which have to be cleaned with soda or soap, or come in contact therewith. In surgery it is also limited in its uses, since it is attacked by phenol, salicylic, and boric acids.—*Pharm. Centralh.*

Thilanin.—This is the name of a new ointment, said to be non-irritant, consisting of lanolin holding in combination 5 per cent of sulphur. It is recommended in all cases where an external application of sulphur is indicated.

MACHINERY HALL.

Quinine Manufacture in Java.

THE principal association of Java planters, at their meeting in May, 1891, passed a resolution asking for Government assistance for the purpose of establishing a quinine factory in the island, and also censured the policy of two Java planters who had made contracts for the direct supply of a German factory upon terms which are considered injurious to the general interest of the growers. Since then it has been decided that the assistant director of the Java Government plantations shall visit British India (where a Government quinine factory is in active working order) for the purpose of obtaining information. It is somewhat remarkable that shortly afterwards, in July, the Wynaad Planters' Association of India petitioned the Indian Government to despatch Mr. Lawson, the Government quinologist, to Java with the object of studying the cultivation of cinchona in that island. There does not appear to be any immediate prospect of the establishment of a union of Java cinchona planters, nor of the erection of a quinine factory in the island; nevertheless, it is clear that the leading Java planters are quite conscious of the strength of their position, since they have elbowed Ceylon out of the first place in the cinchona industry. Some months ago it was estimated that the total cinchona production of Java in 1891 would equal 4,830,000 ounces sulphate of quinine; in 1892, 5,340,000 ounces; and in 1893, 5,490,000 ounces. Since that time the bark shipments from Java have been so heavy that the estimate for this year is likely to be largely exceeded. The position of well-managed cinchona estates in Java, moreover, despite the low unit, is by no means so unfavorable as might be imagined. Several of them have declared from 8 to 11 per cent dividend for 1890–91; and it is confidently asserted that a well-conducted estate, producing bark averaging 4½ per cent from seven-year-old trees, can pay 10 per cent with the unit at 1¼, and with nine-year-old trees and 5 per cent bark can yield the same dividend even with a ¼*d.* per pound unit. These figures should be borne in mind in studying the prospects of quinine. In connection with the cinchona market it may further be mentioned that, in September, the export duty upon cinchona from Ceylon was reduced from 20 to 5 (rupee) cents, and that last month measures were taken to improve the system of sampling cinchona for manufacturing purposes in Amsterdam. The West Coast of Africa has sent larger bark supplies this year than in any previous season, while the island of Jamaica appears to have entirely ceased to count as a cinchona-producing country.—*Chem. and Drugg.*, December 26th.

Solutol and Solveol, Two new Disinfectants.

THE firm of "Dr. F. von Heyden Nachfolger" in Radebeul, near Dresden, the original manufacturers of salicylic acid under Kolbe's now expired patent, have put on the market a soluble form of cresol under the name *solutol*. The solubility of cresol is brought about by the presence of cresol-sodium. The preparation contains, in 100 Cc., 60.4 Gm. of cresol, one-fourth of it in a free state and the remainder as cresol-sodium.

Solutol has been found to be a most efficient disinfectant for general domestic or hospital purposes, such as sinks and water-closets, infected clothing, sputa of consumptives, etc., and an excellent preservative of dead bodies.

It is not suitable for medical or surgical disinfection, owing to its strongly alkaline character.

Solveol, on the other hand, is a disinfectant and antiseptic specially designed for surgical purposes. In this the solution of cresol is brought about by the presence of sodium cresotate. The compound is soluble in water to a perfectly clear liquid, which, while much more efficient than carbolic acid, is at the same time much less poisonous.

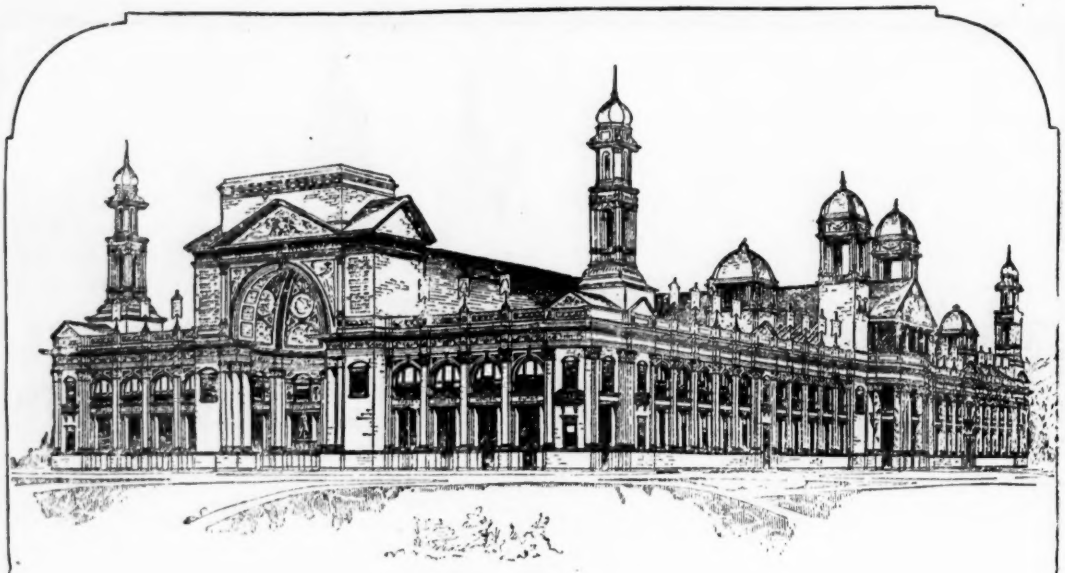
For medical or surgical purposes the most suitable strength of solution is:

Solveol	37 Cc.
Water	to make 2,000 "

For disinfecting the air in sick-rooms, by spraying, 37 Cc. of solveol should be dissolved in 480 Cc. of water. —After *Zeitschr. d. Oest. Ap. Ver.*, December 10th.

Green Olive Oil.

OIL-SOLUBLE aniline blue is now used to give to olive oil the green color which some people like so well.—*Chem. and Drugg.*



ELECTRICAL BUILDING.

Dermatic Varnishes.

DR. P. G. UNNA, of Hamburg, has recently communicated his experience with a new class of preparations first suggested by the manufacturers of ichthyol, namely, dermatic varnishes, intended to form a smooth, adhering, artificial skin, which may be medicated by various substances.

BASSORIN VARNISH.

Unna recommends *bassorin* as a basis for these varnishes, which is to be obtained from tragacanth. Fifteen parts of this gum (powdered) are to be rubbed with water to a thin magma, and the mixture put upon a steam filter which retains cellulose, etc., and permits the mucilage to pass through. The latter is then concentrated so as to weigh 100 parts, and finally mixed with glycerin.

The same kind of varnish may also be obtained from salep. Five parts of this, in very fine powder, mixed with 95 parts of cold water, when heated for half an hour in a steam bath, yield a preparation similar to the preceding. Glycerin should be added to this likewise. Both of these bassorin varnishes form admirable vehicles for zinc oxide.

CASEIN VARNISH.

The casein required for these preparations is obtained in the following manner:

Milk deprived of fat is warmed at a temperature of 95° to 104° F. with a little rennet until it coagulates, and is then filtered. The coagulated mass is washed, first with common then with distilled water, until the washings no longer have an acid reaction, finally dried and reduced to powder. This powder has a yellowish-white color, is quite hard, feeling like sand, insoluble in water, but soluble in all alkaline liquids, forming an easily mobile liniment. Glacial acetic acid as well as lactic acid causes it to swell. The alkaline solutions, which when highly diluted pass completely through filter paper, are not clear, but milky.

According to Beiersdorf, the best alkali for dissolving the casein is *borax*. The largest proportion of borax which can be added without crystallizing out is stated to be 1 part for every 1 part of casein and 25 parts of water. But casein is dissolved in presence of much smaller quantities of borax. The best varnish was obtained by using the following proportions:

Casein	5 parts
Borax	0.6 "
Water	25 "

This solution dries rapidly and yields a handsome, homogeneous, firm coating, very suitable for holding remedial agents.

It was, however, found to have one drawback, namely, that it does not long hold powdery substances (zinc oxide, bismuth salts, white precipitate, etc.) in suspension, and that by their precipitation the adhesiveness of the varnish is injured. This was found to be particularly the case with zinc oxide.

Beiersdorf, however, ascertained that this may be prevented by glycerin. Casein is retained by glycerin in form of emulsion, if it has previously been dissolved in ammonia and the latter has been allowed to evaporate completely. This does not injure the adhesive property of the casein. The mode of procedure is as follows:

Casein	1 part.
Water of Ammonia, Strongest	3 to 3½ parts.
Glycerin	1 part.
Boiling Water	2 parts.

Dissolve the casein, in the cold, in the water of ammonia, add the glycerin, and apply a gentle heat until the ammonia is all dissipated. Then dissolve the residual mass in the boiling water on a steam bath.

The *Glycerin-Casein Varnish* is very elastic, dries well, forms an excellent coating, and can be combined with a large variety of remedies.

All of the before-mentioned varnishes, after being applied to the skin, may be easily removed by washing with water—most easily the last-mentioned one.

ALCOHOLIC BALSAM OR RESIN VARNISHES.

Unna uses five different kinds of these:

1. *Amber Varnish*, prepared from the ordinary commercial amber.

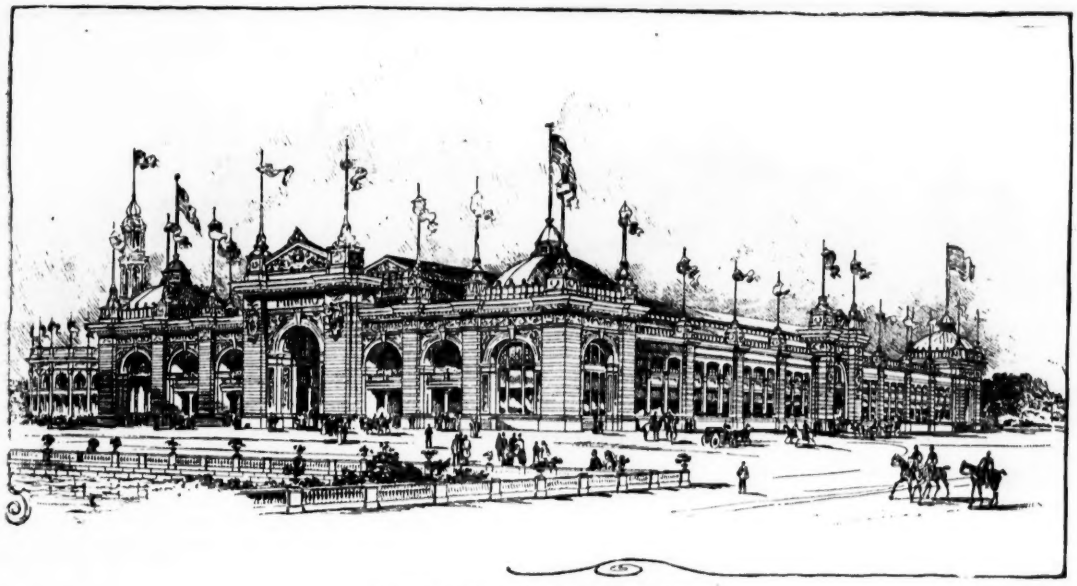
2. *Castor-oil and Shellac Varnish*, prepared from 5 parts of shellac, 1 part of castor oil, and 3 parts of alcohol.

3. *Balsam of Fir Collodion*, consisting of 16 parts of collodion and 1 part of balsam of fir.

4. *Castor-oil Collodion*, 8 parts of collodion and 1 part of castor oil.

5. *Lead Ricinoleate Varnish*, prepared by boiling 1 part of oxide of lead with 1½ parts of castor oil, which results in the formation of lead ricinoleate. This is then almost entirely dissolved by the addition of 2 parts of absolute alcohol.

The following examples are given by Unna, showing



MINES AND MINING BUILDING.

how these various varnishes are used in combination with certain remedies:

Chrysarobin Amber Varnish:

Chrysarobin	1 part.
Amber Varnish, commercial	20 parts.

Pyrogallol-Shellac Varnish:

Pyrogallic Acid	1 part.
Shellac	5 parts.
Castor Oil	1 part.
Absolute Alcohol	15 parts.

Salicylic Acid Collodion:

Salicylic Acid	3 parts.
Canada Balsam	1 part.
Collodion	16 parts.

Zinc Oxide Collodion:

Zinc Oxide	2 parts.
Castor Oil	2 "
Collodion	16 "

Zinc and Lead Varnish:

Zinc Oxide	8 parts.
Lead Ricinoleate	4 "
Absolute Alcohol	8 "
Collodion	1 part.

Ichthyol-Casein Varnish:

Sodium Ichthyolate	5 parts.
Borax-Casein Varnish	15 "

Sulphur-Casein Varnish:

Sulphur	5 parts.
Glycerin-Casein Varnish	15 "

Zinc Oxide-Salep-Bassorin Varnish:

Zinc Oxide	2 parts.
Salep-Bassorin Varnish	18 "

Zinc-Ichthyol-Tragacanth-Bassorin Varnish:

Zinc Oxide	2 parts.
Sodium Ichthyolate	1 part.
Tragacanth-Bassorin Varnish	17 parts.

[We have shortened or slightly modified the titles of these compounds. For instance, in the original the zinc oxide collodion is called "Zink-oxyd-Ricinusöl-Collodium-Firniss," which would be zinc oxide-castor oil-collodion-varnish."—ED. AM. DRUGG.].—After *Pharm. Centralh.*, 1891, No. 49.

Salicylate of Physostigmine.

CHEMICAL handbooks direct this salt to be made by dissolving 2 parts of physostigmine and 1 part of salicylic acid in 30 parts of boiling water, and to set the solution aside in a dark place so that crystals may form. There is this difficulty, however, that the free alkaloid physostigmine (or eserine) is exceedingly prone to be converted, under the influence of air and light, into rubeserine, which has a red color. Birkenwald advises (*Pharm. Zeitsch. f. Russl.*) the following method by which the salicylate may be prepared in colorless crystals: Dissolve sulphate of physostigmine in water, add sodium bicarbonate in excess, shake with several portions of ether in a separator, and filter the united ethereal fractions into a beaker into which some ether containing the calculated quantity of salicylic acid had previously been put. The salicylate of physostigmine will separate in crystals, is then transferred to a filter, washed with ether, and dried in a dark place in vacuo.

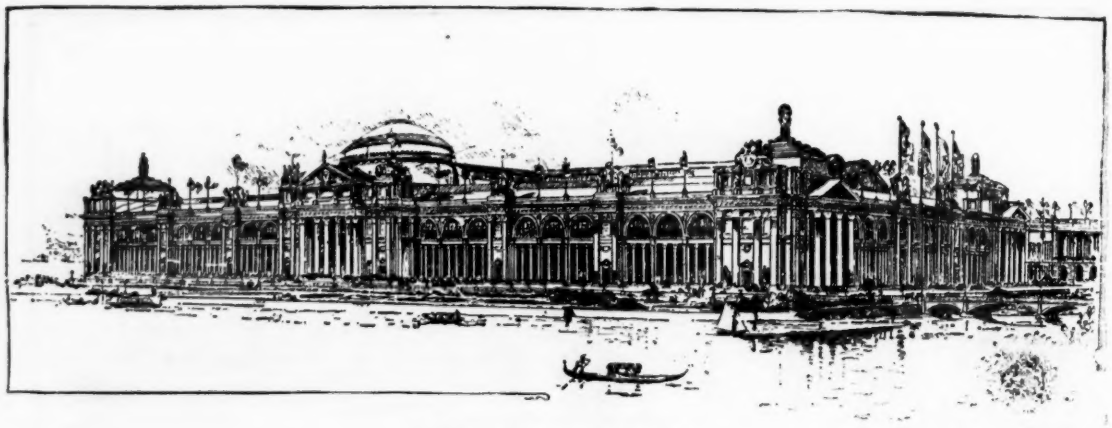
East Indian Coca.

THE coca plant has been cultivated for many years in several parts of the Madras Presidency. It grows like a weed, and the yield of cocaine from the leaves is said to be fully equal to that obtained from the American shrub. Should there be, therefore, at any time a larger demand for this alkaloid, it is said that in Southern India there would be no difficulty in obtaining a very large amount of the leaves. The Government botanist, who reports on the matter, is, however, doubtful whether it would pay planters to cultivate the plant in any large quantities at present.—*Chem. and Drugg.*

Testing Lard.

THE following method for detecting vegetable oils in lard is suggested by Welmans:

Dissolve the lard in chloroform, and shake the liquid with a solution of sodiu n molybdate in nitric acid. If the lard is pure the color of the mixture remains unchanged, while if vegetable oils are present the molybdic solution is reduced and assumes a green color, which is the more intense the more of the vegetable oil is present. On supersaturating this liquid with ammonia the green color changes to blue, while with pure lard no color is developed even after the addition of the ammonia.—*Zeitsch. f. angew. Chem.*



AGRICULTURAL BUILDING.

Benzonaphtol.

YVON and BERLIOZ some time ago introduced a compound derived from benzoic acid and beta-naphtol, to take the place of one previously introduced by Bouchard containing salicylic acid and naphtol, also known under the name of betol. Their object in replacing the salicylic by benzoic acid was to avoid the occurrence of disagreeable symptoms which sometimes show themselves when salicylic acid is given or is set free in the stomach. The compound proposed by Yvon and Berlioz had been previously prepared and described by Maikopar under the name beta-benzyl-naphtol (*Journ. Russ. Chem.-Ges.* [1869], p. 122), but he gave no method of preparation or purification. The two authors now supply this information.

Preparation.—Into a flask of about the capacity of 2 L., and placed on a sand bath, introduce 250 Gm. of powdered beta-naphtol and an equal weight (or, better, a little more, say 270 Gm.) of very pure benzoyl chloride. Heat slowly, so as to bring the temperature very gradually up to 125° C. The reaction proceeds regularly up to this point. Now gradually raise the temperature to 170° C., and hold it there for half an hour. Allow the contents to cool [evidently the liquid contents of the flask ought to be poured into a suitable vessel able to stand the heat], when the mass will be quite hard and consist of benzoate of naphtol mixed with uncombined naphtol. The reaction is as follows:

C_7H_5OCl	+	$C_{10}H_8O$	=	HCl	+	$C_7H_5(C_{10}H_7)O_2$
benzoyl chloride		β-naphtol		hydrochloric acid.		"benzonaphtol."

Purification.—Break up the crude product and dissolve it in boiling 90-per-cent alcohol, of which about eight to ten times the weight of the two component parts of the compound will be required. On cooling, the "benzonaphtol" will crystallize out. The alcohol retains in solution, besides the free naphtol, some benzonaphtolic ether.

The crystalline mass is placed in a funnel, washed with cold alcohol, and dried. If necessary, the process of purification is repeated.

Benzonaphtol is an intestinal antiseptic, and used internally in doses up to 75 gr. per day for adults and 30 gr. per day for children, best given in divided doses.—After *Journ. Pharm. et Chim.*, December, 1891.

[*Note by Ed. Amer. Drugg.*—Benzoyl chloride, C_7H_5OCl, must not be confounded with benzyl chloride, C_7H_7Cl, which contains no oxygen.

Benzoyl chloride may be readily prepared in the following manner:

Heat a sufficient quantity of benzoic acid until it melts, then allow it to cool, and break the mass into pieces. Mix 50 parts of the melted acid with 30 parts of phosphorus trichloride in a flask capable of holding about 200 parts, set the flask into an oil bath, connect it with an upright condenser, and apply heat. At about 50° C. the reaction begins, which is shown by the escape, from the open end of the condenser, of copious quantities of hydrochloric acid vapor. If the operation cannot be conducted outdoors or under a hood, the open end of the condenser may be connected, by suitable tubing, with a vessel containing some water, so arranged that the latter cannot be pressed back into the condenser when the vapors of the acid diminish. At about 75° to 80° C. the reaction is in full operation, and towards 100° C. the contents of the flask have become liquid. The walls of the flask are then covered with a yellowish-red, doughy mass, which is probably an oxygenated compound of phosphorus. The heat is then gradually increased to 120° C., and kept at this temperature until no more acid vapors are given off.

When the contents have cooled, pour the liquid off from the residue as far as possible and subject it to distillation. In doing this, the thermometer will rise almost from the beginning to 193° C., and the bulk of the liquid will pass over between 193° and 202° C. as a colorless liquid.

If required perfectly pure, it should be rectified once more, and is best preserved in sealed tubes or hermetically closed glass vessels.

The product is a colorless liquid of a very pungent odor, boiling at 199° C., and having the sp. gr. 1.2142 at 19° C. In contact with water it decomposes slowly in the cold, rapidly when heated, the products of decomposition being hydrochloric and benzoic acids.]

Rodinal.

THIS is the name of a new photographic developer, proposed by Andresen, which has the following composition:

Para-amidophenol Hydrochlorate	5 parts.
Sodium Sulphite	50 "
Potassa	25 "
Water	1,000 "

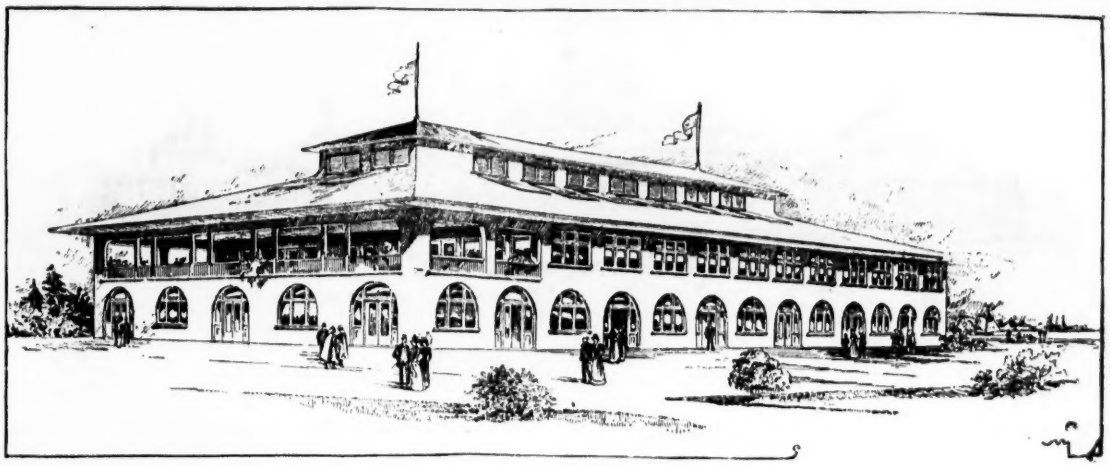
For ordinary purposes it may be diluted with an equal volume of water.

If the alkali is increased by one-fourth to one-third, images developed by it upon bromide-of-silver paper show the most clear and brilliant lights and shadows, with intermediate tints of most perfect gradation.

The same author recommends a concentrated stock solution, which is to be diluted for use with 50 times its quantity of water. It has the following composition:

Potassium Metabisulphite	30 parts.
Para-amidophenol Hydrochlorate	10 "
Boiling Water	100 "
Soda Solution, concentrated	q. s.

Dissolve the salts in the boiling water as far as possible, then add concentrated soda solution until the precipitate first formed is again dissolved.—*Chem. Zeit.*



DAIRY BUILDING.

Test for the Purity of Oil of Wintergreen or Methyl Salicylate.

In a paper containing a review of some assumed tests for the discrimination of natural and synthetic oils of wintergreen, by Prof. Fred. B. Power, published in the *Pharm. Rundschau* (New York, January, 1892), the author proves the fallacy of the tests hitherto published for distinguishing between the true oil of wintergreen and its usual substitute, oil of birch, on the one hand, and the artificial oil on the other. Oil of birch is absolutely identical with the synthetic oil, both consisting of pure methyl salicylate. True oil of wintergreen differs from this only in containing about 0.3 per cent of a hydrocarbon supposed to be a terpene, but which Prof. Power suspects to belong to another class of bodies. [There is no practical way by which the true oil of wintergreen can be distinguished from the oil of birch or the artificial oil, except by fractional distillation, which can only be done properly by an expert.]

It being, therefore, practically useless to attempt to discriminate between these three kinds of oil, it only remains to prove the absence of other oils or liquids which could be used as adulterants, such as oil of sassafras, oil of camphor, oil of turpentine, petroleum, etc.

To detect oil of sassafras, a test by nitric acid has been given by the last Pharmacopœia, but, as Prof. Power has ascertained, this test is dependent upon the time of contact as well as upon surrounding circumstances (temperature, etc.), and therefore liable to error.

Prof. Power, therefore, searched for a more reliable test, and reports his success in the following words:

"This I have succeeded in accomplishing, and it is based upon the simple fact that methyl salicylate, when heated for a few minutes in a water bath with an aqueous 5-per-cent solution of sodium hydrate, forms a perfectly clear and complete solution, while most other oils—such as those of sassafras, camphor, turpentine, etc., as well as petroleum—by their insolubility form a turbid mixture, and on cooling separate drops of oil, while at the same time the original odor of the wintergreen gives place to the distinctive odor of the adulterant. This test is thus seen to have a very wide scope, and is capable of detecting comparatively small amounts of almost any oil which would be used as an adulterant. On adding the solution of sodium hydrate to the oil, a bulky, white, crystalline precipitate is at first produced, which is sodium methyl salicylate,

$$C_6H_4\begin{cases}ONa\\CO-OCH_3\end{cases}$$

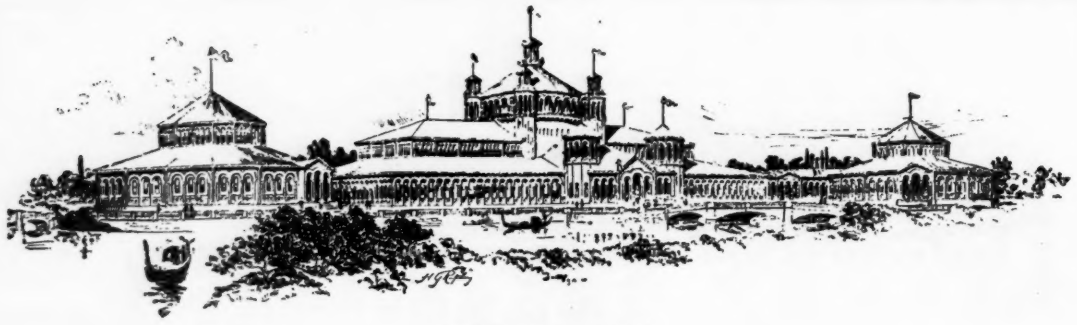
But on heating in a water bath for a few minutes this is completely dissolved, and by a secondary decomposition sodium salicylate and methyl alcohol are formed:

$$C_6H_4\begin{cases}ONa\\CO-OCH_3\end{cases}+H_2O=C_6H_4\begin{cases}OH\\CO-ONa\end{cases}+CH_3-OH.$$

It might be assumed that the so-called terpene of the natural oil of gaultheria (which has been proved by myself and others not to be present in the natural oil of birch, and which is, of course, not contained in synthetic methyl salicylate) would separate by the above treatment and impair the correctness of the test. This, however, is not the case, for only 1 Cc. of the oil is required in connection with 10 Cc. of the solution of sodium hydrate; and if it be remembered that the oil of gaultheria contains but about $\frac{2}{10}$ of one per cent of the so-called terpene, it can easily be understood that with so small a quantity of the oil it will remain dissolved in the liquid, and does not disturb to any extent the transparency of the latter. The practical application of the test may be formulated as follows:

"If to 1 Cc. of the oil (gaultheria, birch, or synthetic methyl salicylate), contained in a capacious test tube, 10 Cc. of a 5-per-cent solution of sodium hydrate be added and the mixture agitated, a bulky, white, crystalline precipitate is produced; and if the tube, loosely corked, be subsequently placed in boiling water for about five minutes with occasional agitation, a clear, colorless, or faintly yellowish and complete solution should be obtained, without the separation of any oily drops either on the surface or at the bottom of the liquid (absence of other essential oils or of petroleum). If the liquid thus obtained be subsequently diluted with about three times its volume of water, and a slight excess of hydrochloric acid added, a white, crystalline precipitate will be produced, which, when collected on a filter, washed with a small amount of water, and recrystallized from hot water, should respond to the tests for identity and purity of salicylic acid (absence of methyl benzoate, etc.). By the use of the above test with various admixtures, I have convinced myself that the presence of 5 per cent of the oils of sassafras or camphor can be detected in the oils of gaultheria or birch with the greatest ease, not only by the separation of distinct oily drops either at the bottom or on the surface of the liquid, but also by their pronounced odor, since the characteristic odor of wintergreen becomes quite completely lost. There is no doubt but that very much smaller quantities, probably as little as 1 per cent of either of these oils, could thus be detected. In applying the test to a specimen of oil of birch which I had previously found to contain about 5 per cent of petroleum, this adulterant was also easily detected by the oily layer on the surface and by its odor after heating with the alkaline liquid, as above described."

"I told Dr. Wray the other day that I believed I was the only living example of his patients." "Was he embarrassed?" "Not a bit; he acknowledged it." "What did he say?" "Said he was sorry to say I was."



FISHERIES BUILDING.

The New British "Methylated" Spirit.

NOT the least of the difficulties encountered by British industrial chemists in competing with foreign rivals has been the lack of cheap alcohol. To meet this difficulty the sale of "methylated spirit" was permitted—a mixture, as most of our readers know, of alcohol with impure wood spirit. This liquid was in many cases further contaminated with shellac, an addition objectionable to all consumers save the varnish makers. Still the methylated spirit, when free from resinous matter, was no small boon, and was preferred—*e.g.*, by photographers—to pure ethylic alcohol. The powers that be, however, were afraid that the article was too good for use in the arts, and have therefore enacted that it must be polluted by a further addition of coal naphtha!

The alleged reason for this step in the wrong direction is that the methylated spirit was drunk by workmen and others, to the injury of the revenue and the promotion of intemperance. The new preparation fills photographers and many chemical manufacturers with dismay. If such spirit comes in contact with water or any aqueous liquid, it is at once rendered turbid and unfit for use. The hope that it will not be drunk is fallacious. We have known of hands at chemical works—seasoned topers—who would even toss off a "tot," or *petit verre*, of the coal naphtha itself! If the heads of the revenue really wished to make the spirit undrinkable, they should have prescribed the addition of Dippel's animal oil. A mere trace of this liquid, without interfering with the legitimate uses of the spirit, renders it so loathsome to smell and taste that no one would dream of drinking it. This is no untried expedient; it is one of the legalized additions used in Germany for "denaturizing" alcohol.—*Chem. News*, December 18th, 1891.

On the Rectification of Benzin.

AT one time the lower boiling fractions of petroleum were a veritable waste product, and much ingenuity was wasted in trying to get rid of them. Thus they were used for a while in feeding the fires under the boilers of petroleum works, or else they were added, in various proportions, to illuminating oil destined for countries where low-test oils were not prohibited. When their illuminating power had once been recognized, they began to be employed for enriching coal gas, and for this purpose they are now employed on a very large scale.

In more recent times these products play an important rôle as fuel for motive power and as solvents for fats, oils, and similar substances.

The term *benzin* is applied, in practice, to that portion of petroleum which is obtained between a minimum temperature, indefinable by any particular number, and a maximum temperature of 150° to 160° C. Since a thermometric definition or selection is not convenient in practice, it is customary to go by specific gravity, the upper limit being 0.750 to 0.760—in the case of Russian oil somewhat higher.

This crude product of the first distillation requires purification or rectification for almost every purpose. The characteristic properties of a good benzin are absolute freedom from color, limpidity, faintness of odor (which should be rather agreeable), complete volatility, and, for certain purposes, absolute absence of fatty or oily matters (which, as a rule, is shown by its being completely volatilized at a low temperature).

For the purpose of extracting fats and oils, benzin has, at the present time, almost completely displaced the solvents formerly employed (alcohol, ether, carbon disulphide, etc.). Experience has shown that, for such purposes, that fraction of the lighter boiling constituents of petroleum is most suitable which comes over between 80° and 120° C. [Of course, the lower the boiling point of the oil or fat to be extracted the lower boiling must be the benzin. For certain delicate essential oils the lightest or lowest boiling benzin or naphtha must be used.]

The rectification of benzin and its separation into fractions of distinct boiling points is not an easy matter, since every fraction contains more or less of the lighter as well as the heavier constituents, at least after the first rectification. It is only by using specially constructed dephlegmators, and repeating the rectification, that sharply defined fractions are obtained. The most efficient dephlegmators are those constructed for this purpose by Huber & Alter, of Prague. They consist of a series of tubes, forming a worm, contained in a tank which is fed with water, the temperature of which can be exactly regulated. An apparatus of this kind can be devised even on a small scale, and is far preferable, for practical purposes, to the fractional-distillation apparatuses generally used in chemical laboratories.

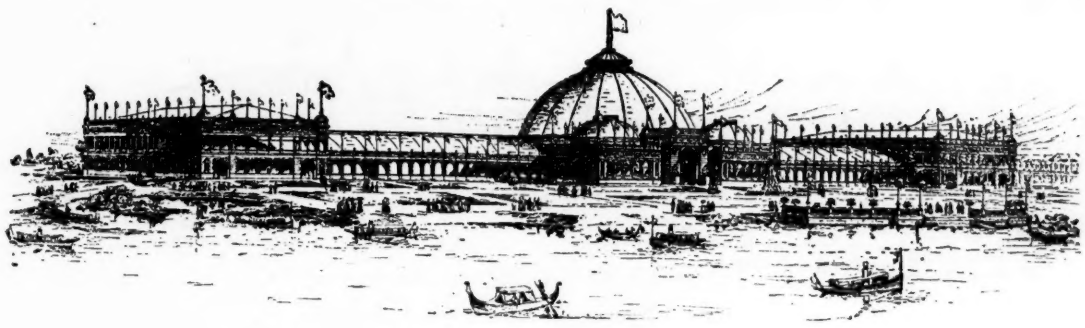
Delicate Test for Cerium.

IN the course of a toxicological research for strychnine, Prof. P. C. Plugge found that strychnine may serve as a most delicate test for cerium. [This is not new, but Prof. Plugge is the first to give reliable details regarding the conditions under which the test is successful.]

The strychnine solution was prepared by dissolving 1 part of strychnine (or one of its salts, such as the nitrate or sulphate) in 1,000 parts of concentrated sulphuric acid. The cerium must be in condition of ceroso-ceric oxide, such as is obtained by precipitating the solution of a cerium salt with a fixed alkali. Cerium salts themselves (such as the oxalate) respond to the reaction likewise, but by no means with the same delicacy as the oxide. The sensitiveness of the reaction is so great that $\frac{1}{100}$ Mgm. of ceroso-ceric oxide may still be recognized.

The test is best made as follows: A small quantity of the solution of the cerium salt is mixed with as much dilute solution of sodium hydrate as is required to render it distinctly alkaline, and the whole is then evaporated to dryness in a capsule. On pouring a few drops of the strychnine reagent upon the residue, a magnificent blue color is produced, which is soon replaced by a cherry-red or faintly red tint, the intensity of which depends upon the amount of cerium present.

The amount of alkali added in excess must be such that only a trifling amount of the sulphuric acid present in the reagent is neutralized.—After *Arch. d. Pharm.*, 229, 558.



HORTICULTURAL BUILDING.

Quinine Hydrochlorate.

THE neutral hydrochlorate of quinine, official in the United States and various other pharmacopœias, crystallizes in white needles which are usually united in bundles, and which contain, when uneffloresced, 2 molecules of water of crystallization [$C_{20}H_{24}N_2O_2HCl.2H_2O=396.4$]. This water of crystallization escapes easily at 120° C. without causing the salt to melt. The melting point of the salt lies at 158° to 160° C., and even then the alkaloid does not suffer decomposition.

If an aqueous solution of the salt, saturated at 15° C., is set aside for some time at a low temperature (0° C.), it happens sometimes that in place of the well-known long, asbestos-like needles there are formed large octahedral crystals belonging to the monoclinic system. On dissolving these crystals in water considerably short of saturation, and allowing the liquid to cool, the same kind of crystals are sometimes reproduced.

It was first supposed (by O. Hesse, from whose paper on this subject in Liebig's *Annalen*, 267, 142, we take this notice) that these crystals were due to the presence of an impurity of the quinine salt. But it was soon ascertained that they differed from the ordinary hydrochlorate of quinine merely in the amount of water of crystallization, containing 3 molecules instead of 2.

Acid Hydrochlorate of Quinine, which salt is especially useful for hypodermic purposes, is best obtained either by decomposing the acid sulphate of quinine (disulphate or "bisulphate" of quinine) with an equivalent quantity of barium chloride, or by adding to a solution of the neutral hydrochlorate in water 1 molecule of hydrochloric acid. On evaporating either of these solutions at a gentle heat, the acid salt will separate, at a certain temperature, either in white, concentrically grouped needles or as a gelatinous mass. The latter gradually passes into the crystalline form, particularly at a gentle heat. But in either case the resulting dihydrochlorate is *anhydrous*. The crystallized salt (that is, the salt which separated in crystalline groups) may be dried up to 110° C. without undergoing any change; the gelatinous salt, on the other hand, when thus dried, becomes white and opaque. The crystallized as well as the hyaline salt, after it has become opaque, yields, upon being triturated, a powder which reflects sunlight with a distinctly blue tint.

The Marseilles Soap Industry.

THE manufacture of soap is one of the oldest industries of Marseilles. For a long time Venice and Genoa had the monopoly of this manufacture, but towards the sixteenth century two foremen from Toulon came to settle down at Marseilles. As they did not possess much capital, they installed themselves in an old house near the main road, and set up two boilers, in which they manufactured from the oils of Provence a white soap which was used by the inhabitants of the town. They had to pay at that time a duty of 1¼ *fr.* per quintal upon these oils. The industry did not extend much until, a number of years later, some merchants with capital developed it by building better works, providing more suitable implements, and bringing over workmen from Genoa who were adepts in the art of soapmaking. They were so successful that the manufacturers of Toulon and other places in Provence were obliged to have recourse to the use of a mixture of fat and butter in order to sell their goods at the same price as that of Marseilles. This kind of adulteration gave rise to such complaints that Louis XIV. issued an edict, dated October 5th, 1688, in which the factories were placed under state supervision. This rigorous measure had the effect of increasing their number and improving their product, which now quite eclipsed that of Genoa. The deterioration of the olive trees which followed in 1709 was another source of advantage to the Marseilles soapmakers, who monopolized the foreign oils which were in demand owing to the failure of the olive crop. Thus the only thing that remained was to counteract the competition of Spain, whose special brands enjoyed an excellent reputation and were much depended on. To accomplish this, the manufacturers of Marseilles, taking advantage of a strike, offered a high salary to a Spanish workman to come to Marseilles and manufacture soap according to the process in vogue at Alicante, which was a town of much repute in soapmaking. The foremen of Marseilles profited so much by the information gained from this foreigner that they were in a short time able to equal the products of Alicante, and also invented a new kind—a pale blue soap which sold for 3*l.* per quintal. Then it became the custom to buy at Marseilles, where there was a good market for blue, mottled, and white soaps, and in the year 1760 the town possessed twenty-eight factories, capable of producing 300,000 quintals of soap. The usual consumption did not exceed 200,000 quintals, which represented then a sum of 4,500,000*l.*, and that exported 200,000*l.* Twelve hundred men were employed in the manufacture of soap, in which the porters of Piedmont had replaced convicts who were employed before the suppression of galleys.—*Chem. and Drugg.*

Hæmol and Hæmogallol.

PROF. KOBERT, of Dorpat, is the originator of two new medicinal derivatives of hematin, viz., *hæmol*, which contains zinc; and *hæmogallol*, which is prepared by the intervention of pyrogallic acid. Both of these substances will be put on the market by E. Merck, of Darmstadt.

Hæmol is a blackish-brown, and hæmogallol a reddish-brown powder. They are to be administered in wafers or Japanese paper (usego paper), in doses of 1½ to 8 gr. per day.

The introduction of these new remedies is due to the recently made observation that the products derived from the coloring matter of the blood by reduction are efficient agents for producing blood in the sick as well as the healthy organism.—After *Pharm. Zeit.*

OLD LADY—Doctor, do you think there is anything the matter with my lungs? PHYSICIAN (after careful examination)—I find, madam, that your lungs are in a normal condition. OLD LADY (with a sigh of resignation)—And about how long can I expect to live with them in that condition?

WOMAN'S BUILDING.

Aseptic Ligatures.

ASIDE from the older methods of rendering and keeping catgut and other ligatures aseptic—viz., by maceration in carbolized oil, or in alcohol and oil of juniper—there are several others, of more recent date, which have either not stood the test of time or contain some objectionable features. One of them, viz., treating the catgut with boiling alcohol, has been the cause of several serious accidents through carelessness in heating the alcohol, or unsuitable apparatus, the alcohol taking fire and doing more or less damage.

The ideal liquid for preparing aseptic ligatures should have the following properties:

1. It should not only extract from the catgut every constituent which would act as an irritant or interfere with its subsequent use, but should completely destroy every trace of micro-organism attached to it.
2. It should not need to be changed after the catgut is once introduced.
3. It should not injure the texture or tensile strength of the ligatures.
4. It should render the latter fit for use in a short time.
5. It should be volatile, leaving, however, enough antiseptic material in the catgut, etc., to act as preservative.

Such a liquid is *chloroform* containing in solution a definite quantity of *biniodide of mercury.* Catgut kept in this liquid, containing $\frac{1}{1000}$ part of the biniodide, has been found to be absolutely free from germs, and to keep unimpaired in its tensile strength for any length of time.

Catgut rendered aseptic in this manner is now being experimented with in this city, and, from reports so far received, promises to fulfil every expectation.

For macerating or preserving catgut, etc., in biniodide-chloroform, wide-mouthed bottles with well-fitting glass stoppers must be used. Such bottles, for instance, in which hydrate of chloral (in pounds) is imported answer well for the purpose. If it is desired to seal them, this is to be done by a solution of gelatin containing a little glycerin. Wax, paraffin, and many other substances would not answer, as the chloroform would dissolve them.

Phenerythen, the Red Coloring Matter of Carbolic Acid.

E. FABINI asserts that the reddening of carbolic acid is due to the production of a peculiar coloring matter, named by him phenerythen, having the composition $C_{30}H_{30}NO$. The theory of its production is that when carbolic acid containing ammonia comes in contact with metals there is produced a body belonging to the class of chinones, of a dirty brown color, which is gradually oxidized and passes over into "phenerythen." This latter is a feeble base, forming colored salts with acids. Its sulphate is indigo blue, the nitrate red, the hydrochlorate violet. By treating it, in alcoholic solution, with zinc dust, it may easily be reduced to a colorless substance (a leuco-base).—After *Pharm. Zeit.*

Acetanilide and Salicylic Acid.

DR. RITSERT observed some time ago that the mixture of the above compound with ammonium bromide, known as "antinervin," is remarkable for the fact that the melting point of the mixture is much below that of its constituents. Mr. H. Prüsse, one of his pupils, has since taken the matter up, and sends a report to the *Pharmaceutische Zeitung.* Acetanilide melts at 114° C. and salicylic acid at 156° C., but antinervin melts at about 80° C. The following are the results obtained from the examination of various mixtures, the lower figures denoting when melting began, and the higher when it was complete·

One equivalent of salicylic acid with 1 equivalent of acetanilide,	82° C. — 119° C.
$\frac{1}{2}$ " " "	93° C. — 141° C.
$\frac{1}{4}$ " " "	127° C. — 148° C.
$\frac{1}{10}$ " " "	139° C. — 150° C.
$\frac{1}{100}$ " " "	144° C. — 154° C.
One equivalent of acetanilide with 1 equivalent of salicylic acid,	82° C. — 119° C.
$\frac{1}{2}$ " " " "	76° C. — 86° C.
$\frac{1}{4}$ " " " "	88° C. — 100° C.
$\frac{1}{10}$ " " " "	91° C. — 104° C.
$\frac{1}{100}$ " " " "	107° C. — 111° C.

It is evident from these figures that as small a proportion as $\frac{1}{100}$ equivalent of either body mixed with the other is capable of materially altering the melting point, and, obviously, antinervin is as near as possible represented by a mixture of 1 equivalent of acetanilide and half an equivalent of salicylic acid.—*Chem. and Drugg.*

Qualitative and Quantitative Determination of Iodides in Urine.

THE following method is recommended by Adolf F. Jolles (*Zeitsch. f. anal. Chem.*, 30, 288). Mix about 10 Cc. of the urine with an equal volume of concentrated hydrochloric acid, then introduce, by means of a pipette, 2 or 3 drops of a weak solution of chlorine, allowing them to run down the side of the test tube. In presence of even very small quantities of iodine a brownish-yellow ring will appear at the zone of contact. Upon addition of starch solution this ring will become blue. The limit of reaction is stated to be 1 part of iodine in 50,000 of urine.

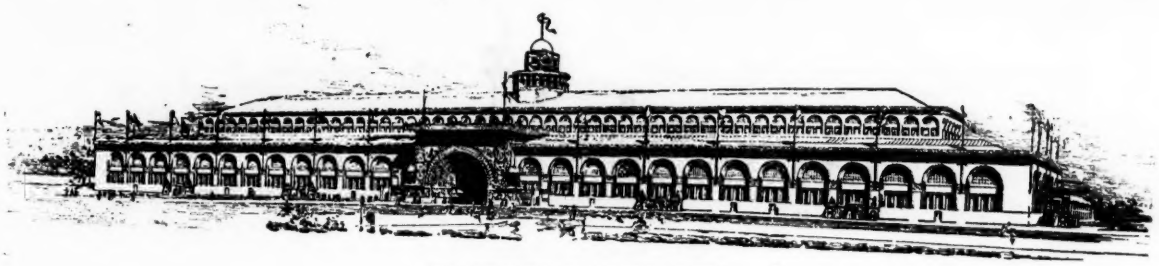
The quantitative determination has to be made by precipitation with silver nitrate in the usual manner.

Migraine Pastils.

La Médecine Moderne recommends the following combination:

Caffeine	1½ gr.
Phenacetin	1½ "
Milk Sugar	5 "

Mix well, and make into a pastil.



TRANSPORTATION BUILDING.

Aseptic Dressings.

THE new military pharmacopœia of the Austrian Empire contains a number of directions for preparing aseptic dressings and ligatures, which, being approved by high professional authority, deserve to be brought to the notice of our readers.

1. CARBOLIZED CATGUT (3 SIZES).

Into a wide-mouthed bottle introduce 100 strings of crude catgut and add a mixture consisting of 108 Gm. of crystallized carbolic acid, 12 Gm. of distilled water, and 600 Gm. of olive oil, taking care that the catgut is submerged below the level of the liquid, and shaking the contents occasionally. When the turbid liquid has become entirely clear the catgut will be found to have become soft and flexible. Then remove it, and transfer it to small vials, 4 strings to each (about 13 feet), containing carbolized oil.

2. SURGICAL SILK.

Previous to use, the silk is to be immersed for at least forty-eight hours in a 5-per-cent solution of carbolic acid.

3. IODOFORM GAUZE.

In an earthen vessel, cleaned with solution of corrosive sublimate, mix 200 Gm. of glycerin intimately with 100 Gm. of iodoform, by trituration, so as to produce a perfectly uniform yellow, thin paste. Add to this gradually 833 Gm. of alcohol, and mix the whole carefully. Introduce pieces of gauze 1 yard long into this mixture, one after the other (about 25), then take them out, wring out the excess uniformly, spread them out, lay them on top of each other, and keep them during twenty-four hours in a closed vessel. Then pack the prepared gauze into parchment paper and label it.

4. SUBLIMATE GAUZE.

To a solution of 5 Gm. of corrosive sublimate and 20 Gm. of sodium chloride in 100 Gm. of water add 200 Gm. of glycerin. Introduce into the liquid 25 yards of gauze, knead it thoroughly, then gradually draw it out, removing the excess of liquid [the original directions involve the use of certain mechanical appliances], and dry it.

Licorice Manufacture in France.

THE *Droguiste* describes a licorice manufactory in the town of Uzès, Department of the Gard, where the sticks —which are known in France by the fancy word "zan" (derived, it is said, from the colloquial slang expression "donnez-moi-z'en," supposed to be used by children eagerly asking for the sweetmeat)—are manufactured. The licorice root from which the French preparations are manufactured is grown on the river Ebro, in Spain, and there the house in question (which, we suppose, is typical of others in the same trade) has a branch establishment, employing about 350 hands, who sort, decorticate, and bundle the best pieces of the root for export to France, and boil the remainder into paste. From Mequinez, where the factory is situated, the licorice wood and juice are sent to Tarragona and thence to Uzès. The Uzès factory employs about 250 hands and is lighted throughout by electricity.—*Chem. and Drugg.*

The Solvent Action of Alcohol of Different Degrees of Strength upon Certain Drugs.

MESSRS. E. H. PARR and R. WRIGHT publish, in the *Pharm. Journal* of December 12th, 1891, the results of their continued researches on the subject mentioned in the title. In this paper they treat of tincture of belladonna.

As our special interest lies with the methods used by the authors to determine the amount of alkaloid contained in the several tinctures, and incidentally also with the menstruum which was found to be the best for extracting the active principles, we only give those portions of the paper which have reference to these points. The authors say:

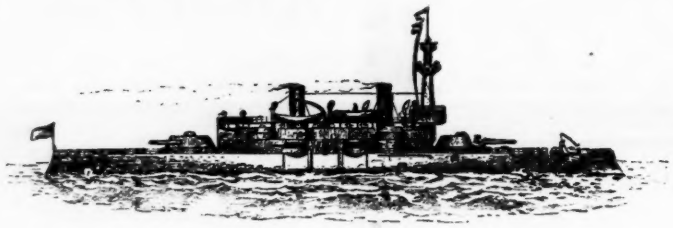
Before deciding upon the process to be followed in estimating the tinctures, a few preliminary experiments were tried, the following processes being employed, and 50 Cc. of a standard tincture being used for each estimation:

Experiment 1.—The tincture was evaporated until all spirit was driven off, and the residual liquor allowed to cool. It was then filtered into a separating funnel and acidified with dilute sulphuric acid. The residue in the dish was treated with chloroform, the solution added to the contents of the separating funnel, and the whole well shaken. After separation the chloroformic layer was drawn off, and the process repeated with successive small quantities of chloroform until the latter came away colorless. The mixed chloroformic washings were then freed from traces of alkaloid by shaking with a little acidulated water, and the latter separated and added to the contents of the funnel. An excess of ammonia was then added, and the liberated alkaloid taken out by three agitations with chloroform. The chloroform solutions were in turn drawn off, mixed, shaken with a little ammoniated water, and after separation removed and evaporated over a water bath, the residue being heated at 100° until it ceased to lose weight.

Experiment 2.—The tincture was evaporated to a low bulk, water being added, until all spirit was removed. The residual liquor was allowed to cool, an excess of dilute sulphuric acid added, the alkaloidal solution filtered, the dish rinsed with acidulated water, and the rinsings added to the original solution. A slight excess of ammonia was then added, and the alkaloid removed by shaking with three portions of chloroform. From the mixed chloroformic solutions the alkaloid was extracted by agitation with three successive quantities of acidulated water.

The alkaloidal solutions were mixed, a slight excess of ammonia added, the alkaloid shaken out with chloroform, the chloroformic solution evaporated, and the residue dried at 100° and weighed.

Experiment 3.—The tincture was evaporated, with addition of water, until all spirit was driven off, the extract allowed to cool and then filtered into a separating funnel. The dish was rinsed with water acidulated with 1 Cc. of semi-normal sulphuric acid, and then with 10 Cc. ether (0.720), and the whole transferred to the separating funnel and the mixed liquids shaken. After separation the ethereal layer was removed, and the process repeated with successive small quantities of ether until the latter came away colorless. The mixed ethereal washings were twice shaken with acidulated water to remove traces of alkaloid, and the acid washings transferred to the funnel.



THE NAVAL EXHIBIT.

The alkaloidal liquor was then made alkaline with ammonia, and the alkaloid shaken out with successive doses of ether. The mixed ethereal solutions were afterwards evaporated, and the residue dried at 100° till constant, and weighed.

Experiment 4.—This was conducted exactly as No. 3, benzol being substituted for ether.

The results were as follows:

Experiment 1: 50 Cc. tincture = ,0145 Gm. alkaloid.
Experiment 2: 50 Cc. " = .013 " "
Experiment 3: 50 Cc. " = .011 " "
Experiment 4: 50 Cc. " = .010 " "

These results showed that chloroform removed more alkaloid from the solution than either ether or benzol. In order to determine whether ether was capable of taking out all the alkaloid from an alkaline solution, and, if not, to settle the question as to whether the extra amount of alkaloid removed by chloroform possessed the same characters and properties as that removed by ether, the following experiment was tried:

Fifty Cc. of the tincture were evaporated, and the alkaloid extracted with chloroform as in Experiment 1. The alkaloid was removed from the chloroformic solution by agitation with acidulated water, the latter solution rendered alkaline with ammonia and shaken with three successive portions of 15 Cc. of ether (0.720). From the mixed ethereal solutions 0.012 Gm. of alkaloid was obtained. The mother liquor was then evaporated over a water bath to drive off retained ether, and, after cooling, was again made alkaline and shaken up with two successive small quantities of chloroform. The mixed chloroformic solutions yielded on evaporation 0.003 Gm. of alkaloid, the properties of which, so far as they could be ascertained by the action of various reagents, were precisely the same as those of the alkaloid removed by ether. A second experiment with another sample of tincture gave the following results:

Alkaloid removed by ether..... ....=0.015 Gm.
" " " chloroform.....=0.002 "

In another experiment the alkaline alkaloidal solution was shaken with six successive quantities of ether, but even then traces of alkaloid were still retained by the mother liquor, the result being as follows:

Alkaloid removed by ether..... =0.0195 Gm.
" " " chloroform.....=0.002 "

In every instance the residue was tested with appropriate reagents and with the same results. It is evident, therefore, that ether alone does not remove all the belladonna alkaloid from solution, or, if so, that this can only be effected by the use of a very large volume of the solvent.

It was ultimately decided to employ process No. 1 for the estimation of all the tinctures, the exact details being as follows:

Fifty Cc. of the sample were evaporated in the usual way till free from spirit. The residual liquor was allowed to cool, and was then filtered through cotton wool into a separating funnel, the dish rinsed with a little water to which 1 Cc. of semi-normal sulphuric acid had been added, the residue carefully dissolved in 10 Cc. of chloroform, and the whole transferred to the separating funnel and the mixture well shaken.

After separation the chloroform was drawn off and the process repeated with successive portions of 5 Cc. chloroform until the latter came away colorless. The mixed chloroformic solutions were shaken with a little acidulated water to remove mechanically adherent alkaloid,

TABLE SHOWING QUANTITATIVE RESULTS OF ESTIMATION OF SAMPLES OF TINCTURE OF BELLADONNA LEAF.

No. of Sample.	Amount of Alkaloid in Gm. from 100 Cc. Tincture.					Amount of Extractive in Gm. from 100 Cc. Tincture.				
	80 per cent tincture.	70 per cent tincture.	60 per cent tincture.	50 per cent tincture	40 per cent tincture.	80 per cent tincture.	70 per cent tincture.	60 per cent tincture.	50 per cent tincture.	40 per cent tincture.
1.....	0.024	0.025	0.026	0.028	0.028	0.925	0.900	0.950	0.975	0.925
2.....	0.024	0.024	0.024	0.026	0.023	1.36	1.24	1.30	1.20	1.28
3.....	0.026	0.025	0.026	0.025	0.025	1.32	1.45	1.45	1.47	1.42
4.....	0.026	0.024	0.026	0.025	0.026	1.06	1.16	1.14	1.18	1.14
5.....	0.042	0.045	0.044	0.043	0.045	1.42	1.52	1.54	1.50	1.58
6.....	0.0205	0.020	0.021	0.020	0.021	1.44	1.52	1.52	1.34	1.32
7.....	0.020	0.020	0.021	0.021	0.020	1.14	1.40	1.44	1.38	1.42
8.....	0.0395	0.041	0.0385	0.0395	0.039	1.44	1.50	1.48	1.54	1.54
9...	0.017	0.016	0.016	0.018	0.017	0.725	0.850	0.925	1.01	1.00
10.....	0.014	0.014	0.015	0.015	0.013	0.70	0.82	0.90	0.94	0.88
11.....	0.020	0.020	0.021	0.021	0.022	0.90	1.00	1.40	1.20	1.22
12.....	0.015	0.016	0.017	0.016	0.016	0.92	1.04	1.14	1.14	1.08
Average....	0.024	0.024	0.0246	0.0248	0.0246	1.112	1.20	1.24	1.24	1.23
ROOT TINCTURES.										
German.....	0.020	0.020	0.021	0.020	0.019	0.725	0.775	0.802	0.851	0.854
English.....	0.0305	0.032	0.0305	0.030	0.0265	1.40	1.46	1.48	1.46	1.54

and the acid washings added to the contents of the separating funnel. The washings were then made alkaline by the addition of 2 Cc. of water of ammonia (0.960), and the alkaloid extracted by shaking with two successive portions of 10 Cc. and then with 5 Cc. chloroform. To obtain the alkaloid in a pure condition, the mixed chloroformic solutions were shaken with acidulated water, 20 Cc. distilled water being acidulated with 2 Cc. of seminormal sulphuric acid, and used in three successive portions.

The acid alkaloidal solutions were separated in turn and then mixed, the mixed liquids made alkaline with ammonia, and the alkaloid removed by agitation with two successive portions of 10 Cc. and then with 5 Cc. chloroform. The mixed chloroformic alkaloidal solutions were drawn off into a platinum dish and evaporated, and the residue dried over a water bath. The dish was then transferred to a desiccator and allowed to cool, and was then weighed. It was anticipated that the resinous and fatty matter present would render difficult the removal of alkaloid from the chloroform used in washing out the coloring matter. Such, however, was not found to be the case, agitation with acidulated water being found to remove the last traces of alkaloid. This was proved in many of the estimations by evaporating the washed chloroform containing the coloring matter to dryness, treating the residue with a little dilute sulphuric acid, filtering, and testing with Thresh's reagent.*

In several of the 40 to 50-per-cent tinctures the mucilage present was found to interfere seriously with the estimation of the alkaloid by hindering, and in some cases altogether preventing, the separation of the chloroform. This difficulty may frequently be overcome by keeping down the volume of the aqueous fluid and doubling the amount of chloroform used for shaking out the alkaloid, but the most satisfactory plan to adopt is to precipitate the mucilaginous matter by treatment with 90-per-cent alcohol. The alkaloid, as obtained in the process of estimation, is a perfectly transparent, fused mass. It is soluble in water, and the aqueous solution gives an orange precipitate with Thresh's reagent; a white, more or less curdy precipitate with Mayer's solution; a lemon-yellow precipitate with phosphomolybdic acid; and a kermes-brown precipitate with solution of iodine in potassium iodide. It gives a faint white precipitate with mercuric chloride, and a copious white precipitate with tannic acid cautiously added. The latter precipitate is very readily soluble in a slight excess of the test solution, a trace, however, invariably remaining undissolved. The solution is not precipitated by platinum chloride.

The results are given in the table.

On reference to this table, it will be seen that the average yield of alkaloid by the tinctures made with menstrua of different strengths is very uniform, the balance being very slightly in favor of a menstruum of *low alcoholic* strength. We have little hesitation, however, in saying that, as in the case of henbane leaves, perfect exhaustion of the drug may be effected by the use of any of the menstrua employed, if the process be carefully conducted.

Hydrastinine.—Dr. P. Strassmann, of Göttingen, has recently published his results of a study of the therapeutic properties of hydrastinine, and confirms the statement of Falk and others that it promptly controlled uterine hæmorrhages. He states that its proper dose per day should not exceed 0.15 Gm. (about 2½ gr.), and that is best administered in single doses of about 0.025 Gm. (⅜ gr.), either hypodermically or by the mouth (*Pharm. Zeit.*).

[Inquiries on our part as to the use of hydrastinine, or of any of its salts, among the medical profession of this country, have led to the conclusion that it is known to perhaps half a dozen practitioners only.]

* Thresh's reagent for alkaloids is prepared by dissolving 4.68 Gm. of bismuthic oxide in 80 Cc. of hydrochloric acid and adding enough water to make 300 Cc. Next, 20 Gm. of iodide of potassium are dissolved in water to make 700 Cc. The two solutions are then mixed and the mixture filtered. When added, drop by drop, to the solution of an alkaloid, the reagent causes a reddish-brown precipitate.

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EDITORIAL.

SYRUP of bromide of iron is one of those pharmaceutical preparations which should not be attempted by novices in pharmacy. We have recently learned of a serious accident happening through carelessness during its preparation, due to ignorance, with results which came near being fatal.

The present Pharmacopœia prescribes for syrup of bromide of iron a process which is identical with that for syrup of iodide of iron, except that an equivalent quantity of bromide is substituted for the iodine. In the case of the iodide of iron, the addition of the whole amount of iodine, at one time, to the iron and water is unobjectionable, unless large quantities are operated on at once, in which case it is preferable to add the iodine in instalments, as it is next to impossible to control the violence of the reaction when it once has set in energetically in a large quantity of material.

The addition of the whole of the bromine, however, to the fine iron wire and water is a risky thing for the operator, unless he has taken the necessary precautions. And even then it cannot be done without considerable loss of bromine. If the operation is carried on under a hood with good draught, or out-doors, the operator standing to windward of the apparatus, no harm will come to the latter. But if the operation is carried on in-doors, and the quantities of the several ingredients considerable, the violence of the reaction, if the whole of the bromine is added at once, is so great that large quantities of bromine vapor are dissipated through the air, to the annoyance or danger of the operator. And this is just what happened in the case which has come to our knowledge.

The quantities operated on in this particular case were such that 2,000 Gm. of the syrup were to be made. Accordingly 150 Gm. of bromine were made to act upon 60 Gm. of fine iron wire (or rather card-teeth) in presence of 400 Cc. of water. At first the reaction appeared to be sluggish. This was due to the fact that the bromine was all collected at the bottom, and only a comparatively small surface of the iron exposed to its action at that

ime. But on agitating the mixture there was a violent gush of bromine vapor, the liquid boiling up with great energy, and the operator was nearly suffocated. The respiratory organs of the latter were seriously affected, and he was in great danger for nearly twenty-four hours, when the distressing symptoms gradually subsided. The main treatment, we are told, consisted in the inhalation of very dilute ammonia vapor during the first few hours.

Syrup of bromide of iron is not in frequent demand, and for this reason its preparation is only rarely undertaken. In order to prevent future accidents, we shall give directions how to avoid them.

The main object is to keep down the violence of the reaction and to avoid loss of bromine. This is chiefly accomplished by properly cooling the flask during the operation. It is better, also, not to use too fine an iron wire, but a coarser wire, so that less surface is exposed to the bromine. Wire of about the size of knitting needles may thus be used. But if the fine piano wire is employed, great care must be taken to add the bromine in small portions at a time, and to allow the violence, if any, of the reaction to subside before adding more. A most useful feature is the insertion into the neck of the flask (in which the operation is carried on) of a long test tube, a little less in diameter than the neck of the flask, and the mouth of which is closed with a stopper carrying two tubes, one reaching to the bottom of the test tube, the other terminating directly under the stopper. A current of cold water is made to traverse the test tube, and this acts as an efficient condenser to prevent the escape of any, or at least of more than traces of, vapor of bromine.

The official directions should, therefore, be altered so as to read (U. S. Pharm., p. 322):

Introduce the iron into a flask of thin glass of suitable capacity, add to it 200 parts of distilled water, and afterwards a small quantity (about 2 Cc.) of the bromine contained in a glass-stoppered funnel or burette. Insert a stopper loosely into the mouth of the flask, and gently agitate the contents until the bromine has combined with the iron. Repeat the addition of bromine in small quantities at a time, agitating gently after each addition, and, if necessary, moderating the reaction by cooling the flask with cold water. After all the bromine has been added and no further spontaneous increase of temperature is observed, apply heat to the contents of the flask until they have lost the odor of bromine and acquired a greenish color. Then filter into the sugar, and continue as directed in the U. S. Pharm.

THE use of peroxide of hydrogen has, during recent times, become greatly extended not only in the arts, but also in medical and surgical practice. Aside from the presence or absence of foreign substances, such as acids, barium salts, etc., the value of the commercial article depends upon the quantity of absolute hydrogen dioxide (H_2O_2) it contains, or, in other words, upon the quantity of available oxygen (H_2O+O) obtainable from it.

Ever since peroxide of hydrogen has appeared on the market as a commercial product its strength has been stated by such terms as "10 volumes," "15 volumes," etc., which were intended to mean that 1 volume of the commercial solution would yield, upon decomposition of the absolute hydrogen dioxide (H_2O_2) it contained, 10 volumes or 15 volumes, etc., of oxygen gas. This form of statement may have been very convenient for certain technical purposes, but is unscientific and indefinite, inasmuch as the proportion of the volume of the gaseous oxygen to the liquid solution of peroxide of hydrogen varies greatly with the temperature. Nevertheless the supposed indication of "volume" is the criterion of the commercial value of the peroxide even at the present time.

We have said "supposed indication" designedly, because we know of no brand of peroxide of hydrogen of the market which actually comes up to the volume strength claimed for it. It is known to us that special lots have been made, upon special demand, which were of the full strength claimed, but aside from these we have reason to know that the commercial volume indication is fallacious, as will be seen further on.

Valuation of Hydrogen Dioxide.—The best method of determining the strength of a solution of hydrogen dioxide is titration with permanganate of potassium.

The reaction taking place is as follows:

$5H_2O_2$	+	$2KMnO_4$	+	$3H_2SO_4$	=					
hydrogen dioxide (170)		potassium permang. (316)		sulphuric acid (294)						
=	K_2SO_4	+	$2MnSO_4$	+	$8H_2O$	+	10O			
	potass. sulphate (174)		manganese sulphate (302)		water (144)		oxygen (160)			

The strength of the permanganate solution used for titration is decinormal, containing 3.16 Gm. in the litre ($KMnO_4 = 316$).

Commercial peroxide of hydrogen solution scarcely ever contains over 3 per cent by weight of absolute hydrogen dioxide.

The test is made in the following manner:

Carefully measure 10 Cc. of the peroxide into a graduated cylinder and add enough distilled water to make 100 Cc. Of this liquid transfer 10 Cc. to a beaker, add to it 15 Cc. of diluted sulphuric acid, and then, from a burette, decinormal permanganate solution until the color of the latter is no longer discharged and the liquid shows a faintly pink tint.

If the operation is conducted at the ordinary indoor temperature, the results are practically accurate enough and no correction need be made. It is, however, advisable to make the test at a temperature not greatly exceeding 60° F.

As the solution of the peroxide has, practically, the same specific gravity as water, it is assumed that 1 Cc. of it is equal to 1 Gm. Further, the litre of oxygen gas is taken as weighing 1.43 Gm.

Every 34 parts of hydrogen dioxide (H_2O_2; mol. weight 34) yield 16 parts of free oxygen. And every cubic centimetre of the decinormal permanganate solution corresponds to 0.0017 Gm. of hydrogen dioxide, or to 0.0008 Gm. of oxygen gas. (See the reaction given above, where it will be noticed that only *half* of the oxygen liberated by the permanganate is derived from the H_2O_2.)

Assuming that 19 Cc. of the permanganate solution have been consumed in making the test, then the 10 Cc. of the diluted peroxide, representing 1 Cc. of the original solution, contain $19 \times 0.0017 = 0.0323$ Gm. of absolute hydrogen dioxide, or yield $19 \times 0.0008 = 0.0152$ Gm. of oxygen gas.

Now, since 1,000 Cc. of oxygen gas weigh 1.43 Gm., a simple calculation will show that the 0.0152 Gm. of oxygen will measure 10.6 Cc.

Consequently, the original solution yielded 10.6 times its own volume of oxygen—that is, it is 0.6 over "10 volumes."

Since each cubic centimetre of decinormal permanganate solution is equivalent to 0.0008 Gm. of oxygen, and the latter measures 0.5594 Cc. [$1.43 : 1000 = 0.0008 : x$; $x = 0.5594$], it follows that the figure 0.5594 may be used as a *modulus* for directly calculating the volume strength from the amount of permanganate consumed:

Cc. of permanganate × 0.5594 = volume strength of the peroxide.

A true 10-volume peroxide, therefore, consumes 17.8 Cc. of permanganate. A true 16-volume solution requires 28.6 Cc., etc., etc.

Commercial Usage.—In looking over the advertisements or announcements of manufacturers of peroxide of hydrogen, it will be seen that they use an erroneous method of stating the strength. A few examples will show this.

One manufacturer gives the following "Testing Process":

"The standardizing solution is made by dissolving 3.704 Gm. of permanganate of potash in distilled water, and making up the measure to 1,000 Cc. Each cubic centimetre of this solution corresponds to 1 volume of oxygen (formula O) when applied to 1 Cc. of any solution of peroxide of hydrogen." A foot-note is attached to this, reading: "The reader will notice that I do not refer to 'one volume' of ozone (formula O_3) or condensed oxygen (O_2+O), but I say, positively, 'one volume' of 'oxygen' (formula O)."

Now, a solution of permanganate containing 3.704 Gm. in a litre is not decinormal, but somewhat stronger. Assuming the molecular weight of permanganate of potassium to be 316 (as we have taken it above), each cubic centimetre of the decinormal solution should contain 0.00316 Gm. of the salt, and this, as already explained, is equivalent to 0.0008 Gm. or 0.5594 Cc. of available oxygen (in peroxide of hydrogen). At the rate of 3.704 Gm. of permanganate in the litre, each cubic centimetre would, of course, contain 0.003704 Gm. of the salt, and this would be equivalent to 0.000938 Gm. or 0.656 Cc. of oxygen. Hence a peroxide which consumes, say, 15 Cc. of this permanganate (3.704 Gm. in 1 L.) is not one of 15 volumes, but one of 15 × 0.656, or 9.84 volumes only.

Another circular before us has the following:

"The volumetric strength is determined as follows: 4 Gm. of permanganate of potash are entirely dissolved in 1,000 Gm. (1 L.) of distilled water. In a separate glass or porcelain vessel 150 to 250 Cc. (¼ to ½ pint) water and 20 to 30 drops of sulphuric acid are added, then 1 Cc. (exact) of peroxide of hydrogen from a pipette is also added, and the whole stirred with a glass rod. The permanganate solution is slowly poured with constant stirring from a burette or graduated measure into the vessel containing the H_2O_2, and according to the cubic centimetres of permanganate solution decolorized, the volume is established.—1 Cc. of permanganate solution is destroyed by 1 Cc. of H_2O_2 of 1 volume strength, and consequently a solution containing 1 Cc. of H_2O_2 15 volumes strong will destroy the color of 15 Cc. of permanganate solution."

One Cc. of the permanganate solution proposed by this manufacturer contains 0.004 Gm. of the salt and is equivalent to 0.001 Gm. or 0.7 Cc. of oxygen (in peroxide). Hence, if only 15 Cc. of permanganate are required to decompose 1 Cc. of the peroxide solution, the latter is not of 15 volumes, but only of 15 × 0.7 or 10.5 volumes. A true 15-volume peroxide would require of this manufacturer's permanganate (4 Gm. in L.) 21.43 Cc.

We believe it would be more rational and simple to express the strength of peroxide of hydrogen, not by the volumes of oxygen obtainable from 1 volume of the former, but by the number of cubic centimetres of decinormal permanganate (of correct titre) required for its decomposition. Then a 15-volume peroxide would in reality consume just 15 Cc. of the permanganate, instead of requiring, as under the present method of stating the strength, 26.8 Cc.

Formulas are wanted for the following:

Weaver's Canker and Salt-Rheum Syrup.
Warner's Elixir Salicylic Acid Comp.
Liquor Tongaline.

NEWS AND NOTES.

F. D. STEVENS & Co., 133 Woodward avenue, Detroit, have recently arranged with C. H. Bangs for a new set of fixtures. It will be, when completed, the finest store in this city.

MR. ALVIN E. HOLT has recently opened a new store at 313 Woodward avenue, Detroit. It is a neatly arranged store and promises success to its founder.

A. A. BIRD & Co. have purchased the R. J. Hamlin store, 253 Michigan avenue, Detroit, and propose renovating and enlarging so as to make it one of the most attractive on the avenue.

A new pharmacy has recently been opened on Croyden street, Tremont, O. DR. PHILLIPS has removed there from Lindsay.

In the *Chicago News* of Dec. 15th the GUGENHEIMER & LORENZ should have been the name of the firm succeeding to the business of Otto Doerlamm at 1559 West 12th st.

MR. C. D. SPAULDING, of Galion, O., has recently sold his "Star" drug store to M. H. MCCLAIN, who has removed it to the store formerly occupied by him at No. 17 W. Main street.

Mr. Spaulding has also sold out his interest in the store No. 12 East Main street to his partner, WM. GILL. The old firm name of Spaulding & Gill is retained for the present. Mr. Spaulding contemplates staying with Mr. Gill a short time.

TSCHONER BROS., recently of Upper Sandusky, O., have removed to Bucyrus, and are pleasantly located there.

The Pan-American Medical Congress in the United States of Colombia.

PURSUANT to nominations by Dr. Pedro M. Ibañez, of Bogota, member of the International Executive Committee for the United States of Colombia, the following organization of the Pan-American Medical Congress has been effected in that country: Vice-President, Dr. Pio Rengifo, New York. Secretaries of sections: General Medicine, Dr. Ignacio Gutierrez Ponce, Paris; General Surgery, Dr. Rafael Rocha Castilla, Bogota; Military Medicine and Surgery, Dr. Abraham Aparicio, Bogota; Obstetrics, Dr. Joaquin Maldonado, Bogota; Gynecology and Abdominal Surgery, Dr. Jose M. Buendia, Bogota; Therapeutics, Dr. Manuel Plata Azuero, Guaduas; Anatomy, Dr. Joan D. Herrara, Bogota; Physiology, Dr. Antonio Bargas Vega, Bogota; Pathology, Dr. Nicolas Osorio, Bogota; Diseases of Children, Dr. Ant. Gomez Calvo, Bogota; Ophthalmology, Dr. Proto Gomez, Bogota; Laryngology and Rhinology, Dr. Luis Fonnegra, Bogota; Otology, Dr. Carlos Esguerra, Bogota; Dermatology, Dr. Daniel E. Coronado, Bogota; Orthopædics, Dr. Juan E. Manrigue, Bogota; Naval Hygiene and Quarantine, Gabriel I. Castaneda, Bogota; General Hygiene and Demography, ——; Mental and Nervous Diseases, Dr. Pablo Garcia Medina, Bogota; Oral and Dental Surgery, Dr. Guillermo Vargas Paredes, Bogota; Medical Pedagogics, Dr. Jorge Vargas, Bogota; Medical Jurisprudence, Dr. Leoncio Barrets, Bogota.

The International Executive Committee.—The Committee on Organization of the Pan-American Medical

Congress, at its meeting at St. Louis last October, elected the following International Executive Committee: The Argentine Republic, Dr. Pedro Lagleyze, Buenos Ayres; Bolivia, Dr. Emelio Di Tomassi, La Paz; Brazil, Dr. Carlos Costa, Rio de Janeiro; British North America, Dr. Jas. F. W. Ross, Toronto; British West Indies, Dr. James A. De Wolf, Port of Spain; Chili, Dr. Moises Amaral, Santiago; United States of Colombia, Dr. P. M. Ibañez, Bogota; Costa Rica, Dr. Daniel Nuñez, San José; Ecuador, Dr. Ricardo Cucalon, Guayaquil; Guatemala, Dr. José Monteris, Guatemala Nueva; Hayti, Dr. D. Lamothe, Port au Prince; Spanish Honduras, Dr. George Bernhardt, Teguagalpa; Mexico, Dr. Tomás Noriega, City of Mexico; Nicaragua, Dr. J. I. Urtecho, Grenada; Peru, Dr. J. Casamira Ulloa, Lima; Salvador, Dr. David J. Guzman, San Salvador; Spanish West Indies, Dr. Juan Santos Fernandez, Habana; United States, Dr. A. Vander Veer, Albany, N. Y.; Uruguay, Dr. Jacinto De Leon, Montevideo; Venezuela, Dr. Elias Roderiguez, Caracas. Hawaii, Paraguay, Santo Domingo, the Danish, Dutch, and French West Indies are not yet organized. Nominations of local officers have been received from a majority of all the members of the International Executive Committee, and a number of the lists have been confirmed by the Committee on Organization. These will be announced as rapidly as acceptances are received.

Auxiliary Committee (each member being the official representative of the Congress in his respective city): Dr. Nicolás Osorio, Dr. Andrés Posada Arango, Dr. Jorge E. Delgado, Dr. Eugenio de la Hoz, Dr. D. Cagiao, Dr. José Manuel Rodriguez, Dr. Paul Emelio Villar, Dr. Felix M. Hernández, Dr. Rafael Calvo, Dr. N. Ribón, Dr. Milceades Castro, Dr. Cayetano Lombana, Dr. José M. Martinez, Dr. Isaias Saavedra, Dr. Severo Forres, Dr. N. Villa, Dr. Everisto Garcia, Dr. Miguel Caicedo, Dr. Emil Villamizar.

The following medical societies have been elected as auxiliaries of the Congress, viz.: Academia nacional de Medicina, Academia de Medicina de Medellin, Sociedad de Medicina del Cauca.

The following journals have been designated as official organs of the Congress, viz.: Revista Médica, Bogota; Revista de Higiene, Bogota; El Agricutor, Bogota; Boletin de Medicina del Cauca, Cali; Anales de la Academia de Medicin de Medellin, Medellin.

The expressed wish of the profession of the United States of Colombia is for a date of meeting during the Colombian Exposition.

CHARLES A. L. REED,
Secretary-General.

CINCINNATI, January 17th, 1892.

Draft of Bill to be Presented to the Legislature.

AN ACT TO PROVIDE FOR THE COLLECTION, ARRANGEMENT, AND DISPLAY OF THE PRODUCTS OF THE STATE AT THE WORLD'S COLUMBIAN EXPOSITION OF EIGHTEEN HUNDRED AND NINETY-THREE, AND TO MAKE AN APPROPRIATION THEREFOR.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1.—For the purposes of exhibiting the resources, products, and general development of the State at the World's Columbian Exposition of eighteen hundred and ninety-three, a commission is hereby constituted, to be designated the New York Managers of the World's Columbian Exposition.

SECTION 2.—The World's Columbian Commissioner-at-Large and the two World's Columbian Commissioners, representing the State of New York, in pursuance of the Act of Congress, entitled "An act to provide for celebrating the four hundredth anniversary of the discovery of America by Christopher Columbus, by holding an international exhibition of arts, industries, manufactures, and the products of the soil, mine, and sea, in the City of Chicago, State of Illinois," approved April 25th, eighteen hundred and ninety, together with such lady managers as may be or may have been appointed to represent the State at such exhibition, in pursuance of the Act of Congress aforesaid, and twelve Commissioners, who shall be appointed by the Governor within ten days after the passage of this Act, and who shall be so selected as to be fairly representative of the agricultural, manufacturing, and commercial industries of the State, shall constitute such Board of Managers of the State of New York. Should any Commissioner-at-Large or any Commissioner heretofore appointed decline to serve on said Board, then his or her respective alternate shall become a member of the Board under the provisions of this Act. Any vacancy which may occur among the Commissioners to be appointed by the Governor shall be filled by the Governor by appointment.

SECTION 3.—The said Board shall meet in the City of New York at such time as the Governor may appoint, and organize by the election of a President, a Vice-President, and a Secretary. Eight members of said Board shall constitute a quorum for the transaction of business. The Board shall have power to make rules and regulations for its own government, provided such rules and regulations shall not conflict with the regulations adopted under the Act of Congress for the government of said World's Columbian Exposition.

SECTION 4.—The Members of the Board appointed under this Act shall serve without compensation, but their actual necessary expenses, while in the actual discharge of their duties, shall be allowed and paid to them out of the sum hereinafter appropriated, upon the audit of the Comptroller.

SECTION 5.—The said Board of Managers is hereby authorized and directed to appoint an Executive Commissioner and to fix his salary, which shall be payable monthly out of the appropriations hereinafter made, and said Executive Commissioner shall be authorized and required to assume and exercise, subject to the supervision of said Board, all such executive powers and functions as may be necessary to secure a complete and creditable display of the interests of the State at the said Exposition; and as the Executive Agent of said Board he shall have personal charge of the solicitation, collection, transportation, arrangement, and exhibition of the objects sent under the authority of the State to said Exposition, and of such objects sent by individual citizens of the State as may be by them placed in his charge; but no expense incurred in the care of such objects of individual exhibitors shall be a charge upon the fund created by the appropriation made in Section 8 of this Act. He shall make a report to the Board monthly, and shall hold office at the pleasure of the Board.

SECTION 6.—The said Board shall have charge of the interests of the State and its citizens in the preparation and exhibition, at the Exposition, of the natural and industrial products of the State, and of objects illustrating its history, progress, moral and material welfare, and future development, and in all other matters relating to the said Exposition; it shall communicate with the officers of, and obtain and disseminate through, the State all necessary information regarding said Exposition, and, in general, have and exercise full authority in relation to the participation of the State of New York and its citizens in the said Exposition.

SECTION 7. The said Board shall make a report of its proceedings from time to time to the Governor, and at any time, upon his written request, it shall make such report, to be by him transmitted to the Legislature, together with such suggestions as he may deem important regarding provisions for a complete and creditable representation of the State at the said Exposition; and immediately after the formal opening of the said Exposition, an account of all expenditures made and debts incurred, if any, showing, in items, the amounts of such expenditures made and debts incurred, and to whom paid or with whom contracted, and for what purpose, certified by the Executive Commissioner and President aforesaid, shall be prepared and filed in the office of the Comptroller.

SECTION 8. To carry out the provisions of this Act, the sum of five hundred thousand dollars, or so much thereof as may be necessary, is hereby appropriated out of any moneys in the treasury not otherwise appropriated, and the Treasurer is directed to pay the same, from time to time, on the requisition of said Board of Managers, signed by its President and Secretary, and on the warrant of the Comptroller, and accompanied by estimates of the expenses, to the payment of which the money so drawn is to be applied.

SECTION 9. This Act shall take effect immediately.